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OSTST10 Instrument Processing Splinter Introduction, Conclusions, Recommendations

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Overview

- Poster Introductions – 3 min
- Two Sessions, plus lots of posters
 - Retracking, SSB
 - Radiometer, OSTM Calibration
- Discussion Points
 - What is needed to maintain errors $\ll \sim 1$ mm/yr ? Over what time scales should drifts be assessed ?
 - Have we met the “no geographically correlated error” requirement ?
 - Are there any orbit choice-related processing issues ?
 - Specific reprocessing, new algorithms recommended ?
 - Discussion of GDR-C proposal
 - What should be done about intrinsic differences of Jason, TOPEX ?

Instrument Processing – Session I.2 Agenda

Monday, Oct 18, 1420 -1630

Time	TITLE	Submitted by
14:20	Poster Introductions - 1 vugraf 2 min preview	
14:45	Overview and Update of the Sea State Bias Corrections for the Jason-2, Jason-1 and TOPEX Missions	TRAN Ngan
14:55	Progress towards a wave model enhanced SSB correction for multiple satellite altimeter missions. Spline-based nonparametric estimation for the altimeter sea state bias correction	VANDEMARK Douglas
15:10	DESIGN OF A WIDE SWATH INTERFEROMETRIC ALTIMETER SIMULATOR FOR SEA STATE BIAS ESTIMATION	DUBOIS Pierre
	SEA SURFACE STATE MODELLING FOR SEA STATE BIAS EVALUATION UP TO KA-BAND	DUBOIS Pierre
15:25	KaRIn/SWOT performance analysis tool - Application to near nadir swath extension	MALLET Alain
15:35	High resolution imaging of the ocean surface backscatter by inversion of Altimeter waveforms	TOURNADRE Jean
15:45	Waveform Retracking Testbench OR Bayesian estimation of altimeter echo parameters	THIBAUT Pierre
15:55	Jason-2 GDR-C standards	Picot, Nicolas
16:05	DISCUSSION: GDR-C standards. Correction drifts. Geographic Correlation of corrections.	

Instrument Processing – Session III.2 Agenda

Tuesday, Oct 19, 1100 -1230

Time	TITLE	Submitted by
Tue Oct 19	Splinter Session III.2 Instrument Processing 2	
11:00	Monitoring Jason 2/AMR Stability using SNO Observations with MetOp/AMSU	CAO Changyong
11:10	TREND AND VARIABILITY OF THE ATMOSPHERIC WATER VAPOR: A MEAN SEA LEVEL ISSUE	OBLIGIS Estelle-Anne
11:20	ERROR STRUCTURES IN ALTIMETRY DATA FROM THE WET TROPOSPHERIC CORRECTION	BROWN Shannon
11:30	An improved wet tropospheric correction for the Cryosat mission over the ocean	STUM JACQUES
11:45	POSEIDON3 DIODE/DEM tracking mode performances and Transponder Calibration	DESJONQUERES Jean-Damien
12:00	DISCUSSION: Correction drifts. Geographic Correlation of corrections.	

Instrument Processing – Posters

RADAR ALTIMETRY WAVEFORM INVERSION : TOPOGRAPHY AND WATER BODIES	NIÑO Fernando
ANALYTICAL MODEL OF THE ELECTROMAGNETIC BIAS USING THE PHYSICAL OPTICS SCATTERING THEORY	NAENNA Praphun
THE HEIGHT OF ACCURACY: RECOVERING HEIGHT INFORMATION FROM BEFORE THE LEADING EDGE	QUARTLY Graham
Improved spatial resolution and range retrieval accuracy with SAR altimeters over the ocean and the coastal zone: a numerical study	GOMMENGINGER Christine
SIMULATION OF DOPPLER ALTIMETRY SIGNALS: APPLICATION TO THE DEVELOPMENT OF A RETRACKING METHOD FOR SENTINEL 3 SRAL INSTRUMENT	AMAROUCHE Laiba
SENTINEL-3 SURFACE TOPOGRAPHY MISSION SYSTEM PERFORMANCE SIMULATOR AND GROUND PROTOTYPE PROCESSOR AND TOPOGRAPHY EXPERTISE	AMAROUCHE Laiba
ICEBERGS DETECTION IN JASON-2 WAVEFORMS	MERCIER Franck
Waveform Retracking Test Bench OR Baysian Estimation	THIBAUT Pierre

Validation of Jason-2 altimeter data by waveform retracking over coastal ocean	LEE Hyongki
INTER-COMPARISON BETWEEN EXISTING WET TROPOSPHERIC CORRECTIONS FOR COASTAL ALTIMETRY	FERNANDES M. Joana
IMPROVEMENT OF COASTAL AND INLAND WATER AREAS HEIGHT ESTIMATION USING NEW RETRACKING TECHNIQUES	AMAROUCHE Laiba
VALIDATION OF JASON-2 RANGES RETRACKED BY THE PISTACH PROJECT OVER THE AMAZON BASIN WATERS	CALMANT Stephane

Summary Points (1)

- Sea State Bias
 - Ngan Tran: there is no SSB differences between Jason-2 and Jason-1 when these solutions are derived from homogeneous data and in similar ways. This is not the case today between TOPEX-A and TOPEX-B.
 - Ngan Tran: It is recommended to derive Jason-2 wind from MLE-3 σ_0 instead of MLE4 value to get better estimates and recalculate the SSB model.
 - Doug Vandemark discussed an alternate spline method for SSB fitting that is less sensitive to data weighting than the current non-parametric method and can be used for higher dimensional models
 - Doug Vandemark has further investigated wave-model-enhanced SSB models. They show improvement, and steps towards future GDR implementation are being taken.

Summary Points (2)

- SWOT Simulation: Two presentations on detailed simulators were given. The simulators will allow estimation of performance and will be useful for instrument trade studies
- Jean Tournade presented an interesting new application to transform waveforms into surface images. It provided interesting images of the Gulf oil slick
- Pierre Thibaut presented a Bayesian retracking algorithm that would provide better performance for noise reduction, but requires a great deal of processing time.
- Jason-2 DIODE/DEM: Performance was re-evaluated on cycle 34 after new DEM upload. Performance is excellent in most cases, but careful validation of DEM is recommended.

Summary Points (3)

- Wet Troposphere
 - J. Stum discussed objective-analysis to provide a wet tropospheric correction for altimeter missions without a dedicated radiometer that is better than a model alone, but not better than a dedicated radiometer
 - C. Cao discussed an inter-sensor calibration approach between AMR and AMSU radiometers which showed good results for 23.8 GHz inter-calibration, indicating a negative trend in the AMR 23.8 GHz TBs and also in the 34 GHz TBs.
 - E. Obligis showed several specific cases highlighting the weakness of the on-orbit calibration approach needed to stabilize the radiometer PD on long time scales. Inconsistency in model inter-comparisons and the potential for geophysical signals to alias into the record were shown.
 - S. Brown showed analysis of AMR calibration stability. Residual drift in GDR product estimated to be -1mm/yr which is removed in new GDR-C calibration. ARCS processing successfully reduced drift on GDR product from 3mm/yr to 1mm/yr.

Recommendations

- Since Jason-1 Jason-2 are now very similar in SSB and bias, should they be treated the same in terms of retracking, SSB, etc?
 - However, Ngan Tran recommended new Jason-2 model based on MLE3 sigma0s
- SGDR-C will include both MLE3 and MLE4 products for expert users
 - How to chose what goes on GDR-C (fewer parameters to avoid confusion)?
- To maintain calibration to highest level ($< \sim 1$ mm/yr) it is important that instrument, algorithm, and cal/val teams be in close communication
- On-orbit radiometer calibration techniques have limitations. Instrument stability for future missions should not rely on on-ground processing but should be provided by instrument design